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west virginia department of environmental protection

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**MEMORANDUM**

**To:** File  
**From:** William T. Rothwell II  
**Date:** March 29, 2017  
**Subject:** Antero Resources Corporation - Davis Well Pad - Harerison County, WV  
**ID #:** 033-00265  
**APP #:** PD17-001

**BACKGROUND INFORMATION:**

Antero Resources Corporation (Antero) was issued a Consent Order on June 30, 2014 and ordered to submit Permit Determinations, including VOC emission determinations for all permanent well pad production storage tanks located state-wide, with the exception of the permit applications and permit determinations submitted prior to the effective date of the order.

**WELL PAD INFORMATION:**

The above subject well pad includes two well heads, two heater treaters, low pressure separators, and two 300 barrel produced water storage tanks along with produced water truck loading. There are no flares, compressor engines, condensate tanks or condensate truck loading associated with this facility and source aggregation to determine major source and PSD is not applicable to this site due to the fact that the subject well pad is not considered to be on contiguous or adjacent to other Antero properties in the area.

The Facility's emission sources were calculated using the extended analysis of the produced water from Tom's Fork Unit 1, one of the wells in the Erwin Hilltop Pad, which is close in proximity and also similar in gross heating value (dry basis) of 1,131 BTU/CF. This extended analysis was considered by Antero to be representative of the materials from the above subject well pad being in the same Marcellus rock formation. The production gas analysis from one of the wells in the Davis Pad was also used in the emission calculation. The extended analysis was performed on August 8, 2016.

The applicant is not subject to 45CSR6, 45CSR10, 45CSR13, 40CFR63 Subpart ZZZZ, 40CFR60 Subpart JJJJ, 40CFR60 Subpart OOOO, 40CFR60 Subpart Kb, 45CSR14, 45CSR19, or 45CSR30.

The uncontrolled emissions were calculated by Antero using ProMax 3.2 and EPA AP-42 Emission Factors and were reviewed by the writer for accuracy. The emissions from the

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produced water emissions (water flash, working and breathing emissions), produced water truck loading, and heater treaters combined are as follows:

<u>Pollutant</u>	<u>LB/HR</u>	<u>TPY</u>
PM	0.74	0.10
PM <sub>10</sub>	0.66	0.10
VOCs	0.15	0.66
CO	0.15	0.65
NOx	0.18	0.77
HAPs	0.02	0.08

**RECOMMENDATION:**

The emission rates of regulated pollutants are below the emission limits of six (6) lb/hr and ten (10) TPY; 144 pounds per calendar day; 2 lb/hr or 5 TPY of HAPs set forth set forth in 45CSR13. The well pad will not trigger a substantive requirement of any State or Federal air quality regulation. Therefore, a permit is not required by this Division for the operation of the above mentioned well pad.



William T. Rothwell II, P.E.  
Engineer

3/29/2017

Date